

CLAIM AMENDMENTS

1. (Currently Amended) An irradiation apparatus for ~~irradiating~~ radiating a radiation beam transported from a particle accelerator onto a location to be irradiated that is positioned on an irradiation table, said apparatus comprising:

a beam interruption part for interrupting said radiation beam;

a position control part for controlling ~~the~~ a position of said irradiation table ~~in such a manner~~ that said radiation beam is ~~irradiated~~ radiated onto ~~the~~ an entire surface of ~~said a~~ target in a plurality of irradiation zones including an overlapping zone formed by a plurality of ~~irradiations~~ radiations of said radiation beam; and

a multileaf collimator control part for controlling said radiation beam ~~so as~~ to provide a slope to a dose distribution in said overlapping zone of said ~~respective~~ irradiation zones, respectively, such that the dose distribution is made flat over the entire surface of said target including said overlapping zone by the plurality of ~~irradiations~~ radiations of said radiation beam.

2. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 1, wherein said slope ~~can be~~ is approximated by a straight line.

3. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 1, wherein said slope has different gradients and ~~can be~~ is approximated by two or more straight lines connected with each other.

4. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 1, wherein said slope changes in a stepwise manner.

5. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 1, wherein said slope ~~can be~~ is approximated by a curved line.

6. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 1, wherein said multileaf collimator control part includes a multileaf collimator provided with a plurality of pairs of opposed leaves, and said multileaf collimator control part decreases ~~the~~ a dose irradiated to said overlapping zone in a direction from a boundary between said overlapping zone and a non-overlapping zone toward another irradiation zone by moving at least one of said opposed leaves in each pair.

7. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 6, wherein said multileaf collimator ~~can be~~ is operated by remote control.

8. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 6, wherein ~~the~~ a direction in which said leaves are driven to move is parallel to the direction in which said dose decreases.

9. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 6, wherein ~~the~~ a direction in which said leaves are driven to move is perpendicular to the direction in which said dose decreases.

10. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 1, wherein said target encloses an area to which said radiation beam is not ~~irradiated~~ radiated.

11. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 1, further comprising a compensating filter commonly usable with at least two ~~or more~~ of said irradiation zones, wherein when irradiation is changed from one of said irradiation zones to another ~~one thereof, the position of~~ a filter driving mechanism drives said compensating filter ~~is driven to move to a position suitable for irradiation by means of a filter driving mechanism.~~

12. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 11, further comprising a filter position verification mechanism for verifying the position of said compensating filter.

13. (Currently Amended) The irradiation apparatus ~~as set forth in~~ of claim 1, wherein said irradiation apparatus is incorporated in a radiotherapy system.

14. (Currently Amended) A irradiation method comprising:
~~a step of dividing a location to be irradiated that needs irradiation of a radiation beam into two, a first and second, irradiation zones~~ zone and a second irradiation zone, the first irradiation zone and the second irradiation zone partially overlapping with each other creating an overlapping zone;

~~a step of irradiating the~~ radiating a radiation beam to said first irradiation zone ~~in such a manner that the~~ a distribution of a dose ~~irradiated~~ radiated to said overlapping zone ~~in said first irradiation zone~~ has a slope that decreases from a boundary between said overlapping

zone and a non-overlapping zone of said first irradiation zone toward said second irradiation zone; and

~~a step of irradiating~~ radiating a radiation beam to said second irradiation zone ~~in such a manner that the~~ a distribution of a dose ~~irradiated~~ radiated to said overlapping zone ~~in said second irradiation zone~~ has a slope that decreases from a boundary between said overlapping zone and a non-overlapping zone of said second irradiation zone toward said first irradiation zone, with ~~the~~ a dose distribution in ~~said~~ a target being made flat.

15. (Currently Amended) An irradiation method comprising:

~~a step of dividing a location to be irradiated, which needs irradiation of a radiation beam,~~ into three, ~~first through third,~~ first, second, and third ~~partially overlapping~~ irradiation zones that partially overlap, each of the first, second, and third irradiation zones having non-overlapping zones and overlapping ~~irradiation~~ zones adjoining each other;

~~a step of irradiating the~~ radiating a radiation beam to said first irradiation zone ~~in such a manner that the~~ a distribution of a dose ~~irradiated~~ radiated to two overlapping zones in said first irradiation zone overlapping with at least one of said second irradiation zone ~~or and~~ said third irradiation zone has a slope that decreases from boundaries between said ~~respective~~ overlapping zones and a non-overlapping zone in said first irradiation zone toward at least one of said second ~~or and~~ third irradiation ~~zone zones~~;

~~a step of irradiating~~ radiating the radiation beam to said second irradiation zone in such a manner that ~~the~~ a distribution of a dose ~~irradiated~~ radiated to two overlapping zones in said second irradiation zone overlapping with at least one of said first ~~or and~~ third irradiation zones has a slope that decreases from boundaries between said ~~respective~~ overlapping zones and a non-overlapping zone in said second irradiation zone toward at least one of said first ~~or and~~ third irradiation ~~zone zones~~, with a total dose distribution in said overlapping zone of said second irradiation zone that overlaps with said first irradiation zone alone being made flat; and

~~a step of irradiating~~ radiating the radiation beam to said third irradiation zone in such a manner that ~~the~~ a distribution of a dose ~~irradiated~~ radiated to two overlapping zones of said third irradiation zone overlapping with at least one of said first ~~or and~~ second irradiation zones has a slope that decreases from boundaries between said ~~respective~~ overlapping zones and a non-overlapping zone in said third irradiation zone toward at least one of said first ~~or and~~ second irradiation ~~zone zones~~, with a total dose distribution in said overlapping zones of said third irradiation zone that overlap with ~~either~~ one of said first and second irradiation zones being made flat.